

## ABSTRACT

The invention involves an active phantom that transmits a waveform based on data reflecting free induction decay signals. The methods and apparatuses of the invention can be used, for example, to test and calibrate a magnetic resonance scanner; evaluate image acquisition parameters and reconstruction algorithms; and train scanner operators. In addition, the invention can simulate complex samples, *e.g.*, a human brain without requiring human subject available to submit to the time and discomfort of a magnetic resonance scan.

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